d. Amendments to Claims

1. (Currently amended) An imaging system, comprising:

a pulsed laser;

a pre-compensator configured to receive optical pulses produced by the pulsed laser and to chirp said optical pulses to pre-compensate for chromatic dispersion;

a transmission optical fiber configured to receive and transport the chirped optical pulses from the pre-compensator;

a GRIN lens configured to receive the optical pulses transported by the transmission optical fiber; and

wherein the GRIN lens has a wider optical core than the transmission optical fiber and the GRIN lens is configured to substantially temporally narrow the optical pulses received from the transmission optical fiber.

2. (Original) The system of claim 1, wherein the transmission optical fiber is a single-mode optical fiber.

3. (Original) The system of claim 1, wherein the GRIN lens is configured to temporally narrow the optical pulses received from the transmission optical fiber by about 50 percent or more.

4. (Currently amended) The system of claim ~~1~~ 3, wherein the transmission optical fiber is a single-mode optical fiber.

5. (Original) The system of claim 4, wherein the GRIN lens is configured to temporally narrow the optical pulses received from the transmission optical fiber by about 30 percent or more.

6. (Original) The system of claim 1, wherein the pulsed laser is configured to produce optical pulses with temporal widths of less than about 400 femto seconds.

7. (Original) The system of claim 1, further comprising:

a light detector configured to detect an intensity of light collected from a sample by the GRIN lens in response to the sample being illuminated by optical pulses delivered by the GRIN lens.

8. (Original) The system of claim 7, further comprising a mechanical oscillator configured to cause the optical pulses delivered by the GRIN lens to scan over a self-crossing Lissajous pattern in the sample.

9. (Original) The system of claim 8, further comprising a processor configured to produce an image of the sample from data indicative of positions illuminated by the delivered optical pulses and corresponding light intensities detected by the light detector.

10. (Original) The system of claim 1, further comprising another optical lens coupled to an end of the GRIN lens located opposite to an end of the GRIN lens that receives optical pulses from the transmission optical fiber.

11. (Original) A method for operating an imaging system, comprising:

chirping optical pulses;

transmitting the chirped optical pulses through a transmission optical fiber wherein chromatic dispersion narrows the chirped optical pulses;

transmitting through a GRIN lens the optical pulses transmitted through the transmission optical fiber; and

wherein the transmitting through a GRIN lens causes further substantial temporal narrowing of the optical pulses transmitted through the transmission optical fiber.

12. (Original) The method of claim 11, wherein the transmitting the chirped optical pulses comprises inserting the chirped optical pulses in a single mode optical fiber.

13. (Original) The method of claim 11, further comprising:

focusing the optical pulses transmitted through the GRIN lens onto spots of a self-crossing scanning pattern in a sample.

14. (Original) The method of claim 11, wherein the focusing further comprises driving a mechanical oscillator with a voltage that includes two driving frequencies.

15. (Original) The method of claim 13, further comprising:

forming an image of the sample from light emitted by the sample in response to molecular multi-photon absorptions caused by the focusing.

16. (Original) The method of claim 13, further comprising:

forming an image of the sample from light emitted by the sample in response to molecular two-photon absorptions caused by the focusing.